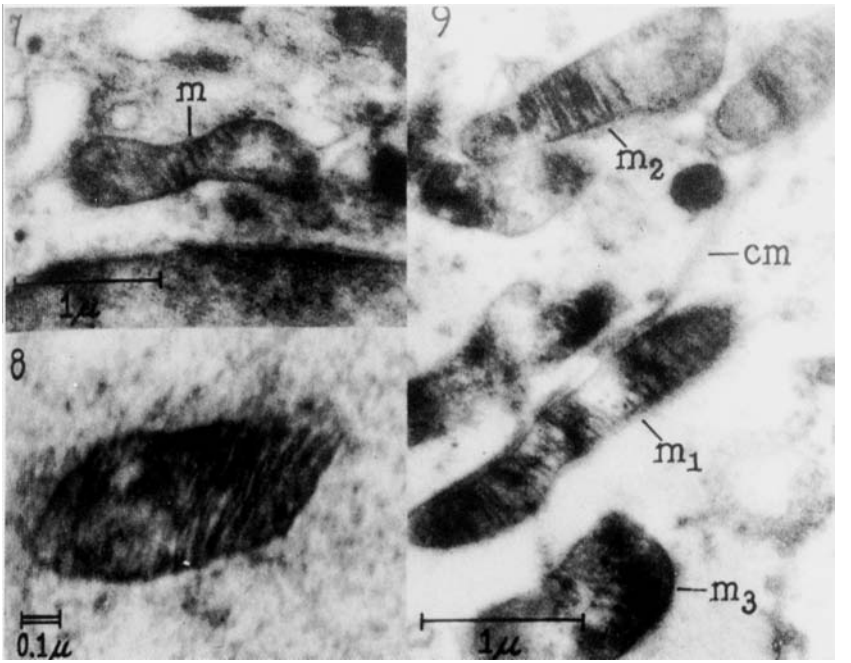

Figure 6.1. Three of Palade's 1952 micrographs revealing what he called *cristae* and construed as infoldings of the mitochondrial membrane. Reproduced from G. E. Palade (1952a), The fine structure of mitochondria, *Anatomical Record, 114*, 427–51, Plate 3, Figures 7–9, p. 449, with permission of John Wiley.

important clue stemmed from a discovery of additional structure in the mitochondrion made possible by improvements in electron microscopy.

More Structure: The Discovery of the Cristae of the Mitochondrion

As noted in Chapter 4, Palade (1952b) conducted a comparative investigation in the early 1950s that resulted in a new buffered osmium fixative. In a study using it as well as Porter's new microtome to cut thin slices, Palade announced the discovery of a "system of parallel, regularly spaced ridges that protrude from the inside surface of the membrane towards the interior" (1952a, p. 428).[10] They are visible in the micrographs in Figure 6.1. Palade

[10] In the same study Palade found clear evidence for the mitochondrial membrane, although he initially took it to be a single membrane. The existence of a mitochondrial membrane had been previously defended both on the basis of electron microscopy of isolated mitochondria and on the basis of biochemical findings about the soluble character of chemical compounds that are retained in the mitochondria, but it was also questioned by others (Harman, 1950b; Huennekens & Green, 1950).

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